In the Claims:

1.   (Currently Amended) Apparatus for constructing a quantifiable model _of a real life system_, the apparatus comprising:

an object definer for converting user input into at least one cell having inputs and outputs, _said user input relating to behavior of said real life system_,

a relationship definer for converting _additional_ user input into relationships associated with said cells such that each said relationships is associatable with said cells via one of said inputs and outputs, _said additional user input also relating to behavior of said real life system_, a quantifier for analyzing a data set to be modeled to assign quantitative values to said relationships and to associate said quantitative values with said associated inputs and outputs, thereby to generate a quantitative model, _said quantitative model being a predictive model usable for automatic decision making in relation to said real life system_.

2.   (Previously Presented) Apparatus according to claim 1, further comprising a verifier for verifying at least one relationship, said verifier comprising determination functionality for determining whether said associated quantitative value is above a threshold value and deletion functionality for deleting said associated input or output if said quantitative value is below said threshold value.

3.   (Previously Presented) Apparatus according to claim 1, wherein said quantifier comprises a statistical data miner.

4.   (Previously Presented) Apparatus according to claim 1, wherein said quantifier comprises any one of a group including: linear regression, nearest neighbor, clustering, process output empirical modeling (POEM), classification and regression tree (CART), chi-square automatic interaction detector (CHAID) and neural network empirical modeling.

5.   (Previously Presented) Apparatus according to claim 1, wherein said data is a predetermined empirical data set.

6.   (Previously Presented) Apparatus according to claim 1, wherein said data is a preobtained empirical data set describing any one of a group comprising a biological process, sociological process, a psychological process, a chemical process, a physical process and a manufacturing process.

7.   (Canceled)

8.   (Currently Amended) Apparatus for studying a process having an associated empirical data set, the apparatus comprising:

an object definer for converting user input into at least one cell having inputs and outputs, said user input relates to behavior of a real life system,

a relationship definer for converting additional user input into relationships associated with said cells such that each said relationships is

associatable with said cells via one of said inputs and outputs, <u>said additional</u> <u>user input relates to behavior of a real life system,</u>

a quantifier for analyzing said associated empirical data set to assign quantitative values to said relationships and to associate said quantitative values with said associated inputs and outputs, thereby to generate a quantitative model~,~ <u>said quantitative model is a predictive model usable for</u> <u>decision making in relation to said real life system.</u>

9.   (Previously Presented) Apparatus according to claim 8, further comprising a verifier for verifying at least one relationship, said verifier comprising determination functionality for determining whether said associated quantitative value is above a threshold value and deletion functionality for deleting said associated input or output if said quantitative value is below said threshold value.

10.   (Previously Presented) Apparatus according to claim 8, wherein said quantifier comprises a statistical data miner.

11.   (Previously Presented) Apparatus according to claim 8, wherein said quantifier comprises functionality for any one of a group including: linear regression, nearest neighbor, clustering, process output empirical modeling (POEM), classification and regression tree (CART), chi-square automatic interaction detector (CHAID) and neural network empirical modeling.

12.   (Previously Presented) Apparatus according to claim 8, wherein said data is a predetermined empirical data set of said process.

13.   (Previously Presented) Apparatus according to claim 8, wherein said process comprises any one of a group comprising a biological process, sociological process, a psychological process, a chemical process, a physical process and a manufacturing process.

14.   (Previously Presented) Apparatus according to claim 8, wherein said quantitative model is a predictive model usable for decision making in realation to said.

15.   (Currently Amended) Apparatus for constructing a predictive model for a process, said process relating to a real life system, the apparatus comprising:

an object definer for converting user input into at least one cell having inputs and outputs, said user input relating to behavior of said real life system,

a relationship definer for converting additional user input into relationships associated with said cells such that each of said relationships is associatable with said cells via one of said inputs and outputs, said additional user input relates to behavior of said real life system,

a quantifier for analyzing a data set relating to said process to be modeled to assign quantitative values to said relationships and to associate said

quantitative values with said associated inputs and outputs, thereby to generate

a model predictive of said process.

16.   (Previously Presented) Apparatus according to claim 15, further

comprising a verifier for verifying at least one relationship, said verifier

comprising determination functionality for determining whether said associated

quantitative value is above a threshold value and deletion functionality for

deleting said associated input or output if said quantitative value is below said

threshold value.

17.   (Previously Presented) Apparatus according to claim 15, wherein

said quantifier comprises a statistical data miner.

18.   (Previously Presented) Apparatus according to claim 15, wherein

said quantifier comprises functionality for any one of a group including: linear

regression, nearest neighbor, clustering, process output empirical modeling

(POEM), classification and regression tree (CART), chi-square automatic

interaction detector (CHAID) and neural network empirical modeling.

19.   (Previously Presented) Apparatus according to claim 15, wherein

said data is a predetermined empirical data set of said process.

20.   (Previously Presented) Apparatus according to claim 15, wherein

said process comprises any one of a group comprising a biological process,

sociological process, a psychological process, a chemical process, a physical process and a manufacturing process.

21.   (Previously Presented) Apparatus according to claim 15, further comprising an automatic decision maker for using said predictive model together with state readings of said process to make feed forward decisions to control said process.

22.   (Currently Amended) Apparatus according to claim 15, wherein said quantitative model is a predictive model usable for decision making in relation to said process.

23.   (Currently Amended) Apparatus for reduced dimension data mining, using a quantifiable model of a real life system, comprising:

an object definer for converting user input into at least one cell having inputs and outputs, said user input relating to behavior of said real life system,

a relationship definer for converting additional user input into relationships associated with said cells such that each of said relationships is associatable with said cells via one of said inputs and outputs, said additional user input relating to behavior of said real life system,

a quantifier for analyzing a data set relating to a process to be modeled comprising a selective data finder to find data items associated with said relationships and ignore data items not related to said relationships, said quantifier being operable to use said found data to assign quantitative values to

said relationships and to associate said quantitative values with said associated inputs and outputs, said process relating to said real life system.

24. (Previously Presented) Apparatus according to claim 23, further comprising a verifier for verifying at least one relationship, said verifier comprising determination functionality for determining whether said associated quantitative value is above a threshold value and deletion functionality for deleting said associated input or output if said quantitative value is below said threshold value.

25. (Previously Presented) Apparatus according to claim 23, wherein said quantifier comprises a statistical data miner.

26. (Previously Presented) Apparatus according to claim 23, wherein said quantifier comprises functionality for any one of a group including: linear regression, nearest neighbor, clustering, process output empirical modeling (POEM), classification and regression tree (CART), chi-square automatic interaction detector (CHAID) and neural network empirical modeling.

27. (Previously Presented) Apparatus according to claim 23, wherein said data is a predetermined empirical data set of said process.

28. (Previously Presented) Apparatus according to claim 23, wherein said process comprises any one of a group comprising a biological process,

sociological process, a psychological process, a chemical process, a physical process and a manufacturing process.

29.   (Currently Amended) A method of constructing a quantifiable model of a real life system, comprising:

converting user input into at least one cell having inputs and outputs, said user input relating to behavior of said real life system,

converting additional user input into relationships associated with said cells such that each said relationship is associated with said cells via one of said inputs and outputs, said additional user input relating to behavior of said real life system,

analyzing a data set to be modeled to assign quantitative values to said relationships and to associate said quantitative values with said associated inputs and outputs, thereby to generate a quantitative model, said quantitative model being a predictive model of said real life system, usable for decision making in relation of said real life system.

30.   (Currently Amended) A method for reduced dimension data mining, using a quantifiable model of a real life system, comprising:

converting user input into at least one cell having inputs and outputs, said user input relates to behavior of said real life system,

converting additional user input into relationships associated with said cells such that each said relationship is associated with said cells via one of said

inputs and outputs, <u>said additional user input relates to behavior of said real life</u>

<u>system,</u>

analyzing a data set relating to a process to be modeled comprising a

finding data items associated with said relationships and ignoring data items

not related to said relationships, and using said found data to assign quantitative

values to said relationships and to associate said quantitative values with said

associated inputs and outputs, <u>said quantitative model being a predictive model</u>

<u>of said real life system usable for decision making in relation to said real life</u>

<u>system.</u>

31.   (Currently Amended) A knowledge engineering tool for verifying

an alleged relationship pattern within a plurality of objects, <u>said objects relating</u>

<u>to a real life system,</u> the tool comprising

a graphical object representation comprising a graphical symbolization

of the objects, <u>the objects being related to behavior of said real life system,</u> and

assumed interrelationships, said graphical symbolization including a plurality

of interconnection cells each representing one of said objects, and inputs and

outputs associated therewith, each qualitatively representing an alleged

relationship, and

a quantifier for analyzing a data set of said objects to assign

quantitative values to said relationships and to associate said quantitative

values with said alleged relationships, thereby to verify said alleged

relationships.

32. (Previously Presented) The knowledge engineering tool as in claim 31, wherein said quantifier comprises a selective data finder to find data items associated with said relationships and ignore data items not related to said relationships such that only said found data are used in assigning quantitative values to said relationships and associating said quantitative values with said associated inputs and outputs..

33. (Previously Presented) The knowledge engineering tool as in claim 31 further comprising automatic initial layout functionality for arranging said inputs and outputs as interconnections between said cells and independent inputs and independent outputs in accordance with an a priori structural knowledge of said system.

34. (Previously Presented) The knowledge engineering tool as in claim 33 wherein said automatic initial layout functionality is configured to derive layout information from any one of a group consisting of process flow diagrams, process maps, structured questionnaire charts and layout drawings of said system.

35. (Previously Presented) The knowledge engineering tool as in claim 31 wherein at least one of said inputs is selected from the group consisting of a measurable input and a controllable input.

36. (Previously Presented) The knowledge engineering tool as in claim 31, wherein an output of a first of said interconnection cells comprises an input to a second of said interconnection cells.

37. (Previously Presented) The knowledge engineering tool as in claim 36 wherein said output is a controllable output to said first interconnection cell and a measurable input to said second interconnection cell.

38. (Currently amended) A machine readable storage device, carrying real life system data for the construction of:

an object definer for converting user input into at least one cell having inputs and outputs, said user input relates to behavior of said real life system,

a relationship definer for converting additional user input into relationships associated with said cells such that each said relationships is associatable with said cells via one of said inputs and outputs, said additional user input relates to behavior of said real life system, and

a quantifier for analyzing a data set to be modeled to assign quantitative values to said relationships and to associate said quantitative values with said associated inputs and outputs, thereby to generate a quantitative model, said quantitative model is a predictive model usable for decision making in relation to said real life system.

39. (Canceled)

40.   (Currently Amended) Data mining apparatus for using empirical data to model a process, _said process relating to a real life system,_ comprising:

a data source storage for storing data relating to a _said_ process,

a functional map for describing said process in terms of expected relationships,

a relationship quantifier, connected between said data source storage and said functional process map, for utilizing data in said data storage to associate quantities with said expected relationships,

thereby to provide quantified relationships to said functional map, thereby to model said process, _and predict the behavior of said process._

41.(Previously presented) Apparatus according to claim 40, further comprising a functional map input unit for allowing users to define said expected relationships, thereby to provide said functional map.

42.   (Previously Presented) Apparatus according to claim 40, further comprising a relationship validator associated with said relationship quantifier to delete relationships from said model having quantities not reaching a predetermined threshold.

43.   (Currently Amended) Apparatus for obtaining new information regarding a process, _said process relating to a real life system and_ having an associated empirical data set, the apparatus comprising:

an object definer for converting user input into at least one cell having inputs and outputs, <u>said user input relates to behavior of said process,</u>

a relationship definer for converting <u>additional</u> user input into relationships associated with said cells such that each said relationships is associatable with said cells via one of said inputs and outputs, <u>said additional user input relates to behavior of said process,</u>

a quantifier for analyzing said associated empirical data set to assign quantitative values to said relationships and to associate said quantitative values with said associated inputs and outputs, thereby to generate a quantitative model, said quantitative values comprising new information of said process, <u>said quantitative model being a predictive model usable for decision making in relation to said process.</u>

44.   (previously Presented) Apparatus according to claim 43, further comprising a verifier for verifying at least one relationship, said verifier comprising determination functionality for determining whether said associated quantitative value is above a threshold value and deletion functionality for deleting said associated input or output if said quantitative value is below said threshold value.

45.   (Previously presented) Apparatus according to claim 43, wherein said quantifier comprises a statistical data miner.

46.   (Previously Presented) Apparatus according to claim 43, wherein said quantifier comprises functionality for any one of a group including: linear regression, nearest neighbor, clustering, process output empirical modeling (POEM), classification and regression tree (CART), chi-square automatic interaction detector (CHAID) and neural network empirical modeling.

47.   (Previously Presented) Apparatus according to claim 43, wherein said data is a predetermined empirical data set of said process.

48.   (Previously Presented) Apparatus according to claim 43, wherein said process comprises any one of a group comprising a biological process, sociological process, a psychological process, a chemical process, a physical process and a manufacturing process.

49.   (Currently Amended) A mMethod for automated decision-making, in relation to a real life system, by a computer comprising the steps of:

(i)   modeling of relations between a plurality of objects, each object among said plurality of objects having at least one outcome, each object among said plurality of objects being subjected to at least one influential factor possibly affecting said at least one outcome, said objects relate to behavior of said real life system;

(ii)   data mining in datasets associated with said modeled relations between said at least one outcome and said at least one influential factor of at least

one object among said plurality of
objects;

(iii)   building a quantitative model to
predict a score for said at least
one outcome, <u>said quantitative model is a predictive model</u>
<u>usable for decision making, in respect to said real life</u>
<u>system,</u> and

(iv)   making a decision, <u>in relation to said</u>
<u>real life system,</u> according to said
score of said at least one
outcome of said at least one object.